Abstract Submitted
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Radio Emission from particle cascades in the presence of a magnetic field[1] KATHARINE MULREY, University of Delaware — Geomagnetic radiation from air showers is an attractive technique for detecting ultra-high energy cosmic rays. Macroscopic and microscopic models have been developed which qualitatively agreed with field observations. A controlled laboratory experiment at the SLAC National Accelerator Laboratory (SLAC) was designed to test these models. The experiment measures the radio frequency emission from cascades of secondary particles in a dense dielectric medium in the presence of a magnetic field. The cascades were induced by a $\sim$ 4.5 GeV electron beam in a polyethylene target placed in magnetic fields up to +/-1000 G. The radio emission beam pattern was sampled in horizontal and vertical polarizations by multiple antennas with a total frequency band of 30-3000MHz. The emission was found to be in good agreement with model predictions, including a Cerenkov-like beam pattern and linear scaling with magnetic field.

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